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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KASTURE, DNYANESH G

ART UNIT	PAPER NUMBER
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3746

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08/03/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,628	Applicant(s) WINKLER ET AL.	
	Examiner DNYANESH KASTURE	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5-31,33-36 and 38-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-31,33-36 and 38-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>See Continuation Sheet</u> |

Continuation of Attachment(s) 6). Other: JP 2002031088 A, Translation of JP 2002031088 A.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11 July 2011 has been entered.

Claim Objections

2. Claims 16, 23, 30, 25 – 27, 28 and 38 - 40 are objected to because of the following informalities:

3. In Re Claim 16 and 30 as mentioned in the previous office action, the phrase “liquid-tight” should be changed to – fluid-tight – for consistency with claim 1.

4. In Re Claim 23, the word "and" appears to be redundant in the phrase “is joined to the rotor (20) and in a transition region” in Lines 2 – 3, this makes the sentence construction improper. It is suggest that the word “and” be deleted.

5. In Re Claims 28, 38, 39 and 40, it is apparent that the phrase “the bearing” refers to the “thrust bearing” of claim 1, but it would make these claims clearer if the that phrase was changed to -- the thrust bearing -- because the word "bearing" has been used in several phrases such as the bearing tube.

6. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 5 – 31, 33 – 36 and 38 - 44 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. In Re Claims 1, 5, 20, 30, 39, 40 and 41 the word “substantially” and related phrases are indefinite for the following reasons. The scope of the claim hinges on what degree of fluid tightness, parallel, outside or location is considered substantially fluid tight, substantially parallel, substantially outside or substantially located. When a term of degree is used, it is necessary to determine whether the specification provides some standard for measuring that degree. See *Seattle Box Co., Inc. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984). The Specification does not quantify or otherwise qualify the scope that is covered by the term substantially. Thus, there is no framework to establish the scope of a substantial feature. Accordingly, the Specification does not provide a standard by which one of ordinary skill would be able to determine the metes and bounds of the claimed apparatus. Further, there is no evidence that one of ordinary skill in the art would understand the scope of the phrase. If the language of a claim is such that a person of ordinary skill in the art could not interpret the metes and bounds of the claim so as to understand how to avoid

Art Unit: 3746

infringement, a rejection of the claim under 35 U.S.C. § 112, second paragraph, is appropriate. See *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986); *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir. 2005) ("Some objective standard must be provided in order to allow the public to determine the scope of the claimed invention.").

It is suggested that the word "substantially" be deleted from all the claims.

10. In Re Claim 1, the phrase "its bearing-side end" in Line 21 should be – the bearing-side end – because the bearing side end has already been defined in Line 9.

11. In Re Claim 5, the phrase "the flange" in Line 5 should be – the support flange – in Claim 1 in order to clearly distinguish it from the radial projection flange in Claim 8.

12. In Re Claim 6, "the flange opening" in Line 4 lacks antecedent basis. It appears the applicant is referring to the bearing tube receiving opening formed in the flange as claimed in Claim 5. Therefore it is suggested that the following phrase be used instead:

-- the bearing tube receiving opening formed in the support flange --.

13. In Re Claim 7, the phrase "the flange" in Line 5 should be – the support flange – in Claim 1 in order to clearly distinguish it from the radial projection flange in Claim 8.

14. In Re Claim 8, the "flange" in Line 2 is clearly not the support flange in Claim 1 or the flange in Claim 7. In order to distinguish this flange, it is suggested that the phrase – another flange – or – an additional flange -- be used instead.

15. In Re Claim 9, it is not clear if the "flange" in Claim 9 is the support flange in Claim 1 or the flange implementation of the radial projection in Claim 8. Further, Claim 1 already states that the radial projection is formed on the bearing side end, therefore a

Art Unit: 3746

claim to the flange (which is an implementation of the radial projection) being provided on an end portion of the bearing tube is redundant.

16. In Re Claim 10, "a free end" in Line 3 is the same free end listed in Line 5 of Claim 1, it is suggested that this phrase be changed to -- the free end --.

17. In Re Claim 17, the phrase "and plug" in Line 4 should be changed to – and the plug – because it is the same plug as claim 15.

18. In Re Claim 21, Figure 1 discloses that there is only one flange on the bearing tube which has been claimed as the "radial projection" in Claim 8 ("implemented as a flange"). Since the bearing tube does not seem to have any more flanges, it is assumed that "an outwardly protruding flange" is the same as "the radial projection is implemented as a flange" of Claim 8.

19. In Re Claim 22, "the tracking cap" in Line 7 and "the support surface" in Line 8 lack antecedent basis in Claim 1.

20. In Re Claim 23, "the fan wheel" in Line 8 lacks antecedent basis in Claim 1.

21. In Re Claim 24, "said lubricant-moving surface" in Line 2 lacks antecedent basis in Claim 1.

22. In Re Claim 25, the phrase "its rotor-side end" in Line 3 should be – the rotor-side end – because the rotor side end has already been defined in Claim 1. Further, "the cover" in Line 3 lacks antecedent basis. It appears the applicant is referring to the "cover PORTION" in claim 1.

23. In Re Claim 28, the phrase "said tube" in Line 3 should be – said bearing tube – because there is no mention of simply "a tube" for antecedent basis. Further, the

Art Unit: 3746

limitation "wherein said bearing arrangement is located in the bearing tube" is a repetition of the limitation "there being arranged, within said bearing tube, a bearing arrangement" in Lines 17 – 18 of Claim 1.

24. In Re Claim 30, "the flange opening" in Line 3 lacks antecedent basis. It appears the applicant is referring to the opening in the support flange to receive the bearing tube as claimed in Claim 1. Therefore it is suggested that the following phrase be used instead: -- the bearing tube receiving opening formed in the support flange --.

25. In Re Claim 31, the phrase "a flange" related to the bearing tube in Line 2 is ambiguous because it has already been claimed as a "radial projection" in claim 8 and as "an outwardly protruding flange" in Claim 21. Yet, it is being claimed again as merely "a flange" in this claim. It is suggested that the same terminology "radial projection" be used in all three claims. Further, "the cover" in Line 3 lacks antecedent basis, it appears the applicant is referring to the "cover portion" in claim 29. Finally, "the flange portion" in Line 4 lacks antecedent basis, it appears the applicant is referring to the support flange.

26. In Re Claims 33 and 34, "a free end" in Line 2 is the same free end listed in Line 5 of Claim 1, it is suggested that this phrase be changed to -- the free end --. Further, "the cover" in Line 4 lacks antecedent basis, it appears the applicant is referring to the "cover portion" in claim 29.

27. In Re Claim 38, the phrase "THAT portion (42) having an enlarged outside diameter" lacks antecedent basis because "THAT portion" has not previously been defined.

28. In Re Claims 39 and 40, "the bearing surfaces" in Line 2 lacks antecedent basis.

Art Unit: 3746

29. In Re Claim 41, "a free end" in Line 2 is the same free end listed in Line 5 of Claim 1, it is suggested that this phrase be changed to -- the free end --. Further the phrase "THAT end (39) of the bearing tube" lacks antecedent basis, it appears the applicant is referring to the bearing-side end in Claim 1. Further, the limitation "at least one closure member (62) is provided which seals that end (39) of the bearing tube" is similar in scope to the limitation "a closure arrangement (62; 262) that closes off the bearing tube (38; 238) in a fluid-tight manner at its bearing-side end" in Claim 1. So it is not clear why this limitation has been added.

30. In Re Claim 43, the phrase "its free end" in Line 2 should be -- the free end of the shaft -- because the free end of the shaft has already been defined in Claim 41.

31. In Re Claim 44, "a free end" in Line 2 is the same free end listed in Line 5 of Claim 1, it is suggested that this phrase be changed to -- the free end --. Further, the phrase "said resilient latching hook" lacks antecedent basis, it appears the applicant has inadvertently used the word "hook" instead of -- hooks --.

Claim Rejections - 35 USC § 103

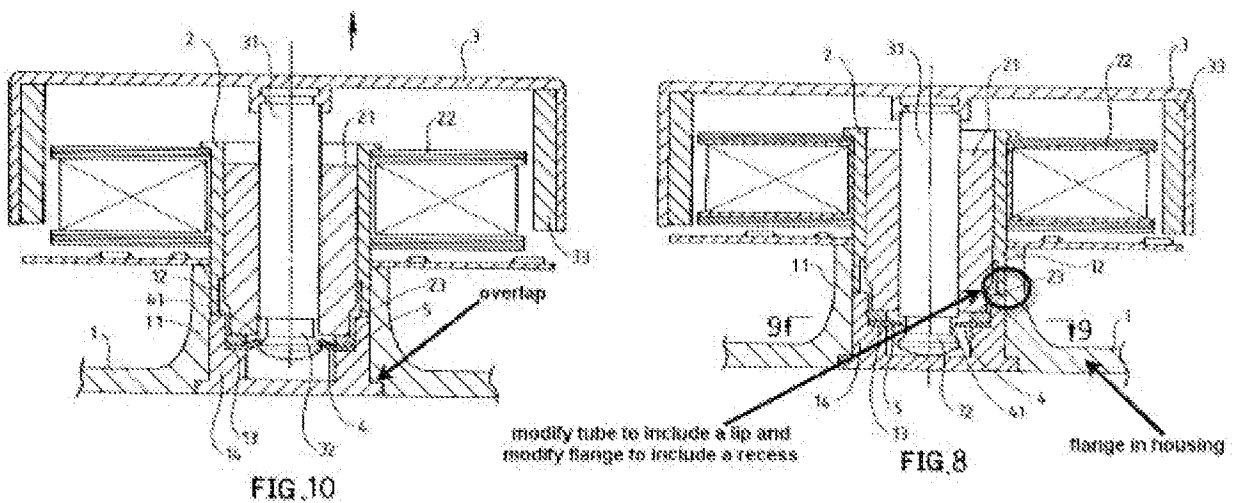
32. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

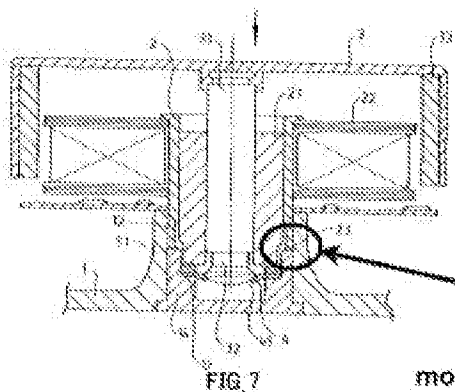
Art Unit: 3746

33. Claims 1, 5, 7 -10, 12 – 19, 28 – 31, 33 and 35 are rejected under 35 U.S.C.

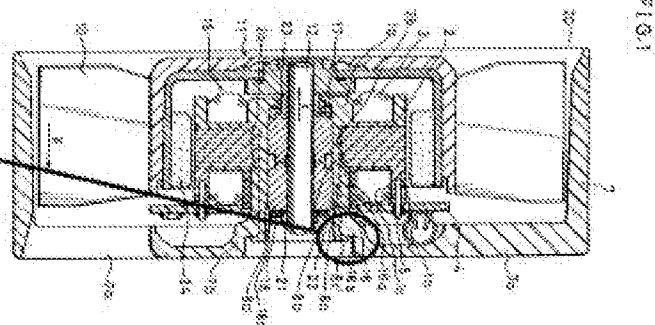
103(a) as being unpatentable over Horng (US Patent 6,498,412 B2) in view of Ootsuka et al (US Patent 5,264,748 A) and in view of Hoshina et al (Japanese Patent JP 2002031088 A, English Translation Provided) and further in view of Ruotsalainen (PG Pub US 20020179233 A1)



Horng (Primary reference)



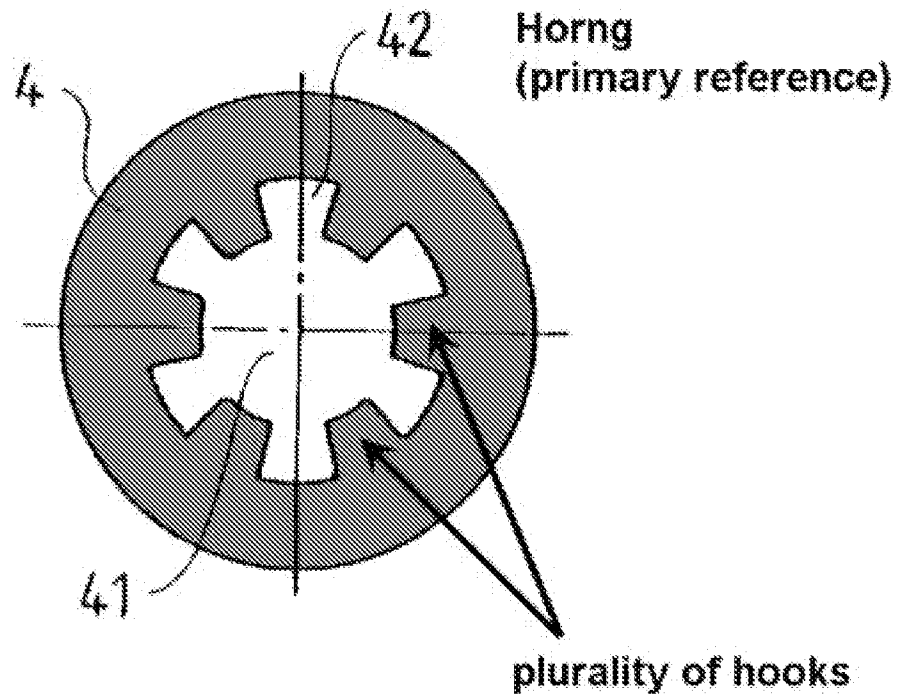
Ootsuka et al



Art Unit: 3746

34. In Re claim 1, with reference to Figure 7, Horng discloses a mini-fan (Column 2, Lines 49-50 state: "The casing 1 can be any conventional casing for a motor or heat dissipating fan") that comprises:

- a drive motor (Figures 7, 8, 10) having an external rotor (3) and an internal stator (22), the external rotor being equipped with a rotor shaft (31) that has a necked down portion (32) adjacent its free end (spherical distal end);
- a thrust bearing cooperating with said free end (the spherical distal end sits on the interior base of plug 14, therefore the interior base is a thrust bearing)
- a bearing tube (2) having a rotor-side end (attached to 33) and a bearing side end (spherical distal end) close to the thrust bearing
- the fan housing (1) having a support flange (radial extension of "axle seat 11") for said drive motor, formed with an opening (central hole of 11) to receive the bearing tube (which extends part way into the opening as depicted)
- said internal stator (22) being secured to an exterior of said bearing tube as depicted, there being arranged within said bearing tube, a bearing arrangement (21) in which said rotor shaft is rotatably supported (Column 2, Line 60 states: "...for rotatably holding a shaft")

**FIG. 6**

- a closure arrangement (14) that closes off the bearing tube in fluid-tight manner at its bearing side end (Column 2, Line 52-53 state: "plug 14 may be provided to SEAL an end of the axle hole), and is equipped adjacent the necked down portion of the rotor shaft (as depicted) with a plurality of resilient & movable latching hooks (4, see shaded area in annotated Figure 6 above) spaced apart by ring (5) from the bearing arrangement, and acting as a detents that engage into that necked down portion of the rotor shaft and, without disturbing normal operation of said rotor shaft, secures the rotor shaft against being pulled out of the bearing arrangement (Figure 8 shows the securing member extending into the necked down portion)

Art Unit: 3746

- with regards to the functional limitation “preventing non-destructive pulling of said rotor shaft out of said bearing arrangement”, MPEP 2114 states that “While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function”
- note that the reference numeral (14) is also the cover portion which overlaps the flange (see annotation: “overlap” above in Figure 10)

35. However, Horng does not disclose a radial protrusion in the bearing tube which abuts against a shoulder, the latching hooks being integrally formed with the closure arrangement and closure arrangement being made at least partly of thermoplastic material and laser welded to form the desired fluid tight connection (Horng clearly states that plug 14 seals the end).

36. Nevertheless, with reference to Figure 1 depicted above, Ootsuka et al discloses a fan motor where a lip at the end (8c') of the bearing holding part that is welded to a recess in part (16), the recess creates a shoulder in part (16).

37. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the end of the bearing tube of Horng so it has a lip (radial projection) as taught by Ootsuka et al, and to form a corresponding shoulder/recess as taught by Ootsuka et al in the flange section of the housing of Horng where the radial projection abuts the shoulder resulting in the bearing tube being held between the flange and the closure element, for the purpose of increasing the engaging strength between the axle tube and base.

Art Unit: 3746

38. Horng modified by Ootsuka et al as discussed above does not disclose that the latching hooks are integrally formed with the closure arrangement.

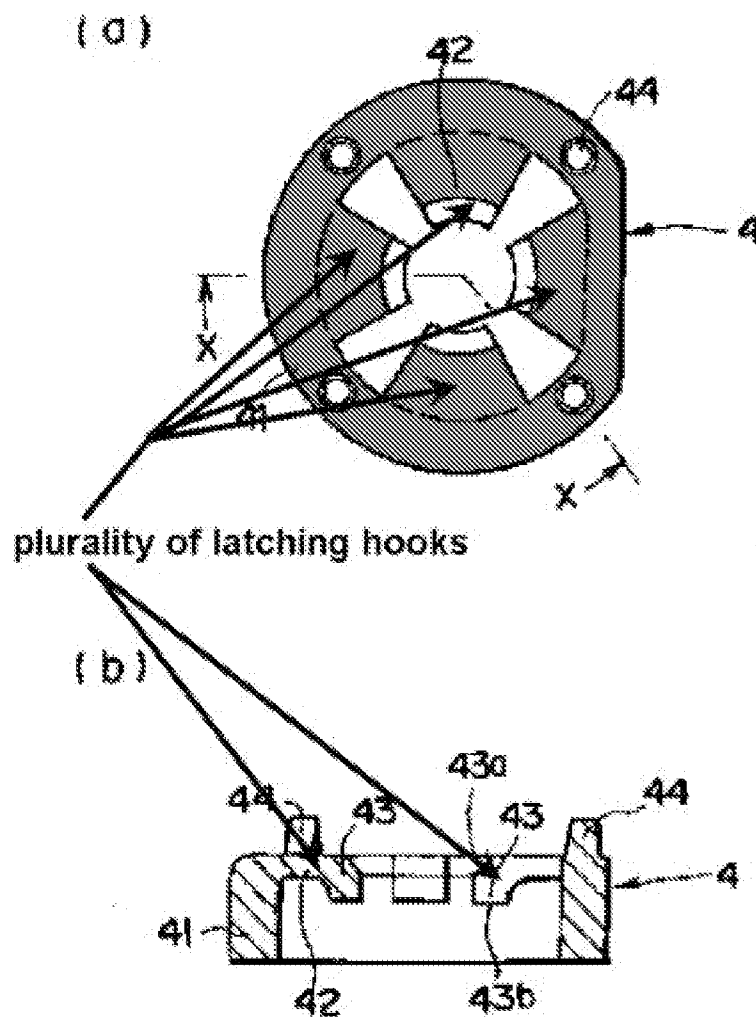
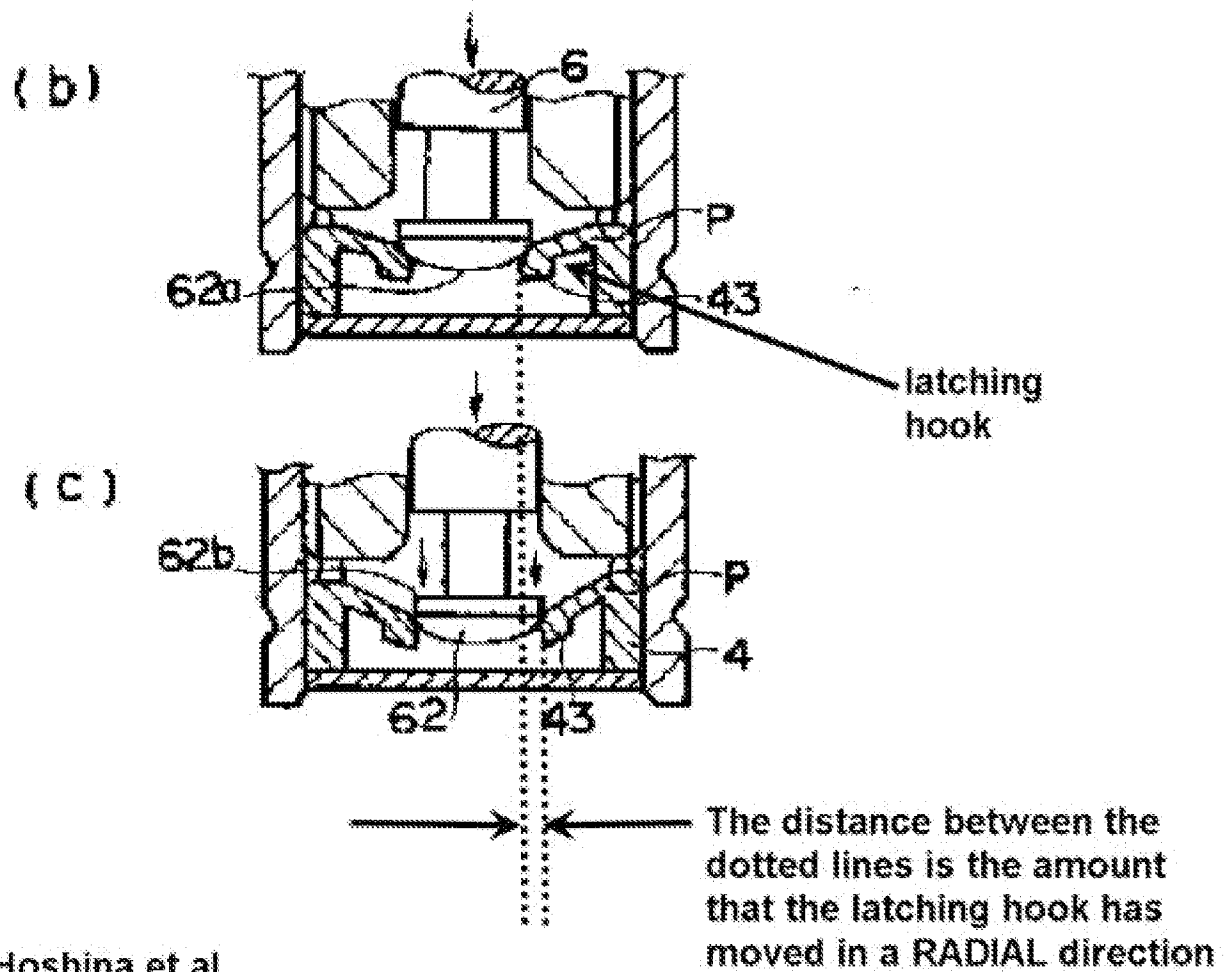


Figure 2, Hoshina et al

Art Unit: 3746

Excerpt, Figure 3 of Hoshina et al:

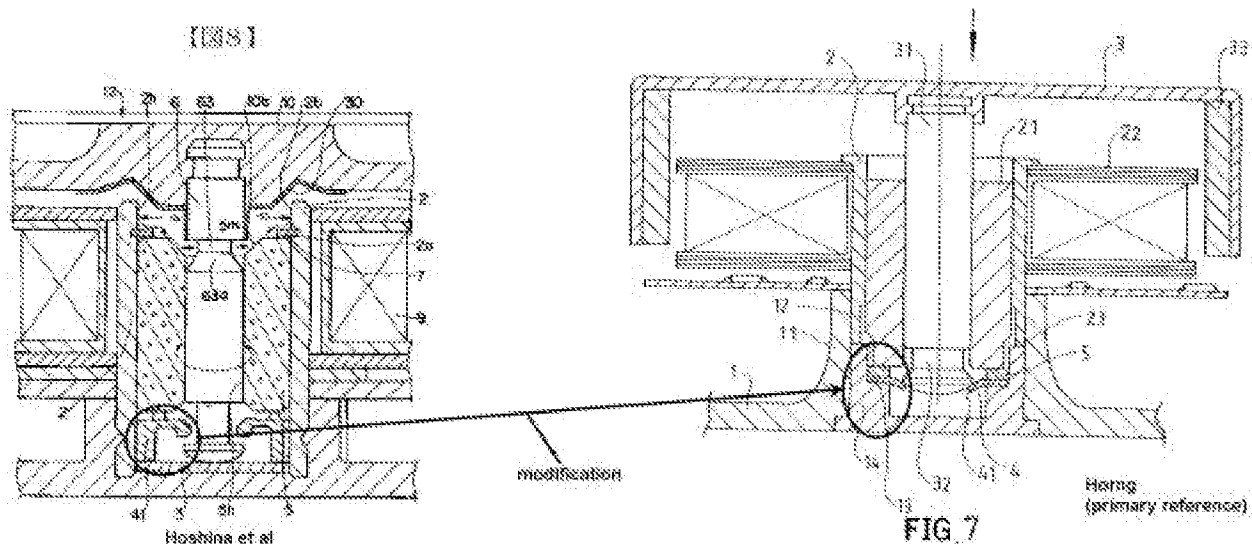


Hoshina et al

39. Nevertheless, with reference to Figures 2, 3 and 8, Hoshina et al discloses a drive motor in a fan having a rotary shaft (6) having a necked down portion (61), a closure arrangement (4) having a plurality of resilient latching hooks annotated above in Figure 2. The latching hooks are radially movable as illustrated above, the distance between the annotated dotted lines is the amount that the latching hook has moved in a radial direction when the shaft is inserted into the closing arrangement. Paragraph

Art Unit: 3746

[0020] states that the hook (42, 43) is integrally molded with tubed base (41) which is part of the closure arrangement. Further, as discussed in Paragraph [0025], face (43b) of the hooks “collides” with the rear surface (62c) of the free end region of the shaft, thereby preventing non-destructive pulling of the rotor shaft.



40. It would have been obvious to a person having ordinary skill in the art at the time of the invention to integrally form the closure arrangement and the resilient latching hooks of Hornig as taught by Hoshina et al since it has been held that forming in one piece (making integral) an article which has formerly been formed in two pieces and put together involves only routine skill in the art - MPEP 2144.04 (V-B).

41. Hoshina et al discloses in paragraph [0011] that the housing body is made of polypropylene resin which is a well known thermoplastic material, and Paragraph [0019] discloses that the closure arrangement (4) is made of polyacetal resin which is also a thermoplastic material. It would have been obvious to a person having ordinary skill in the art at the time of the invention to make the body and closure arrangement of Hornig

Art Unit: 3746

at least partly of thermoplastic material as taught by Hoshina et al because they are easier to manufacture with high precision at low cost, and they are lightweight. Horng modified by Ootsuka et al and Hoshina et al as discussed above discloses all the claimed limitations except for the cover portion (plug) of the closure arrangement being laser welded to form the desired fluid tight connection (Horng clearly states that plug 14 seals the end, but does not describe how it seals the end).

42. Nevertheless, Ruotsalainen discloses a procedure for joining a first plastic part that is at least partially received in the second plastic part (Abstract) using laser welding. Paragraph [0008] states: "a laser beam is then directed to impinge on the second plastic part, through the first plastic part, along the at least one contact zone to form a weld" which suggests that the first material is transparent to laser light. Paragraph [0016] states that the material for the first and second plastics can be thermoplastics such as polyolefins (polypropylene). Paragraph [0020] states that this welding process produces a sealed connection, and "there is no need for further sealing means".

43. It would have been obvious to a person having ordinary skill in the art at the time of the invention to laser weld the cover portion of Horng to the flange thereby forming a substantially fluid-tight connection as taught by Ruotsalainen for the purpose of sealing the opening as suggested by Horng in Column 2, Lines 53 - 54: "a plug 14 may be provided to seal an end of the axial hole 12".

44. In Re Claim 5, Column 3, Lines 49-50 of Ootsuka et al suggest that the bearing tube (8a) is press fit (".. press fit on the inner face of the tubular part 16 ..") into the

Art Unit: 3746

opening (16) formed in the flange (7b). Column 4, Lines 7-10 of Ootsuka et al disclose that a welding connection is formed between (8a) and (16b). As suggested by Ruotsalainen, a laser weld produces a fluid tight joint.

45. In Re Claim 7, since the lip at the end (8c') of the bearing holding part that is welded to a recess in part (16) of Ootsuka et al, the bearing tube is held in a positively engaged manner between the closure arrangement and the flange.

46. In Re Claim 8, the "anchor"/"jutting top part" (8c') as disclosed by Ootsuka et al reads on a radial projection that is implemented as a flange.

47. In Re Claim 9, clearly the flange implementation is provided at the end of the bearing tube as depicted in Ootsuka et al.

48. In Re Claim 10, Horng discloses a spherical end cap which reads on the tracking cap as claimed, and the spherical distal end sits on the interior base of plug (14), therefore the interior base reads on a support surface as claimed.

49. In Re claim 12, Horng discloses that resilient latching hooks (between notches 42) protrudes into the necked down portion without touching it as depicted in Figure 8.

Art Unit: 3746

50. In Re Claim 13, Horng depicts an intermediate section between the taper and the spherical distal end which reads on the spreading member. Hoshina et al depicts the resilient latching hooks which would have to be deflected in a radial direction, as discussed in Claim 1 above, when the shaft is fed through during installation.

51. In Re Claim 14, Column 3, Lines 60-63 of Horng disclose that the ring magnet (33) and the stator (22) attract each other to retain the rotor in place. Therefore the magnetic force between the two urges the rotor towards the closure arrangement.

52. In Re claims 15 and 16, Horng discloses that the closure arrangement is a plug that abuts the bearing tube at its opening as depicted, and in a fluid tight manner as discussed earlier. Ruotsalainen discloses that that the two parts being welded are in an interference fit before welding (Paragraph [0008]). The interference fit reads on “pressed in” as claimed in claim 16.

53. In Re claim 17, Ootsuka et al discloses the lip which is an annular ridge and the recess which is the annular groove that are in a latching connection as depicted. The transition point can also be read as the weld discussed in claim 5. The weld in itself could be read as the groove/ridge combination.

Art Unit: 3746

54. In Re claim 18, as depicted in Figure 7 of Horng, in the vicinity of space (23), the tube (2) has a slightly higher inside diameter where the plug is received than the rest of the tube all the way to the top end.

55. In Re claim 19, Ootsuka et al discloses the portion that protrudes away is the ridge/lip installed in an opening/recess part.

56. In Re Claim 28, the bearing tube clearly has a larger diameter in the region of gap (23). The region of smaller diameter clearly receives bearing (21).

57. In Re Claim 29, the laser weld of Ruotsalainen produces the joint as claimed. Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to Claims 1, 5 and 7 discloses all the claimed limitations.

58. In Re Claim 30, Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to Claims 5 and 29 discloses all the claimed limitations.

59. In Re Claim 31, Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to Claims 7 and 29 discloses all the claimed limitations.

60. In Re Claim 33, Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to Claims 1 and 29 discloses all the claimed limitations.

61. In Re Claim 35, the intersection of the reduced diameter portion and increased diameter portion of the bearing tube of Horng reads on a constriction as claimed.

62. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horng (US Patent 6,498,412 B2) in view of Ootsuka et al (US Patent 5,264,748 A) and in view of Hoshina et al (Japanese Patent JP 2002031088 A, English Translation Provided) and further in view of Ruotsalainen (PG Pub US 20020179233 A1), Horng et al (US Patent 6,819,021 B1) and Schafroth et al (PG Pub US 20020060954 A1)

63. In Re claim 6, Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to Claim 5 discloses all the claimed limitations except for the bearing tube being made of metal and epilam coated as claimed.

64. Nevertheless, Horng et al discloses "The axle tube 11 is preferably made of metal" in Column 1, Lines 33-34.

65. It would have been obvious to a person having ordinary skill in the art at the time of the invention to form the tube of Horng of metal as taught by Horng et al because it would be easy to machine to accurate dimensions.

66. Horng, Ootsuka et al , Hoshina et al , Ruotsalainen and Horng et al as discussed above does not disclose that the bearing tube is epilam coated on its side pressed into the flange opening.

Art Unit: 3746

67. Nevertheless, Schafroth et al discloses in Paragraph [0053] that the meshing of parts can be epilamized.

68. It would have been obvious to a person having ordinary skill in the art at the time of the invention to apply a coating of epilam as taught by Schafroth et al to the "meshing" exterior of the bearing tube of Horng for the purpose of electrically insulating the housing from the tube since the tube is in contact with the stator (Paragraph [0053] of Schafroth et al states that epilam is a good insulator).

69. Claims 11 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horng (US Patent 6,498,412 B2) in view of Ootsuka et al (US Patent 5,264,748 A) and in view of Hoshina et al (Japanese Patent JP 2002031088 A, English Translation Provided) and further in view of Ruotsalainen (PG Pub US 20020179233 A1) and Alex et al (US Patent 6,756,714 B2)

70. In Re claim 11, Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to claim 10 discloses all the claimed limitations except for the free end with the tracking cap is supported by a surface that is a depression and equipped with a lubricant.

71. Nevertheless, Alex et al discloses a free end of shaft (22) with a tracking cap (portion under the retainer 23) supported by a surface (Column 4, Lines 21-22: "..distal end of shaft 22 being rotatably supported by the support 35") that is a depression (15 or 35), and equipped with a lubricant (Column 4, Lines 50-52: "..allow flowing of the

Art Unit: 3746

lubricating oil back to a space between a bottom of the oily bearing 34 and the support 35")

72. It would have been obvious to a person having ordinary skill in the art at the time of the invention to further modify the closure arrangement of Horng modified by Hoshina et al to incorporate a support surface depression with a lubricant as taught by Alex et al for the purpose of reducing wear due to friction between stationary and rotating parts and to further restrict radial vibrations of the shaft.

73. In Re Claim 34, Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to claim 29 and Alex et al as applied to Claim 11 discloses all the claimed limitations.

74. Claims 20 - 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horng (US Patent 6,498,412 B2) in view of Ootsuka et al (US Patent 5,264,748 A) and in view of Hoshina et al (Japanese Patent JP 2002031088 A, English Translation Provided) and further in view of Ruotsalainen (PG Pub US 20020179233 A1) and Gruber et al (US Patent 4,783,608 A)

75. In Re claim 20, Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to claim 1 discloses all the claimed limitations except for a lamination stack, stator winding coils and a rigid electrical conductor extending parallel to rotation axis as claimed.

Art Unit: 3746

76. Nevertheless, Gruber et al discloses a lamination stack (12) with stator winding (Column 3, Line 18) and a rigid electrical conductor (18) extending parallel to rotation axis as depicted in Figure 1.

77. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the stator configuration of Horng to incorporate the rigid electrical conductor as taught by Gruber et al for the purpose of providing increased resistance to vibration because a rigid conductor is less prone to damage (from flexing) than a non rigid conductor.

78. In Re claim 21, Gruber et al discloses an outwardly protruding flange (17) with an orifice as depicted in Figure 1 for the passage of the electrical conductor (18).

79. In Re Claim 22, Figure 8 of Horng et al discloses a permanent magnet (33) that is clearly offset from the stator (22). Column 3, Lines 60-63 of Horng disclose that the ring magnet (33) and the stator (22) attract each other to retain the rotor in place. Therefore the magnetic force between the two urges the rotor towards the support surface.

80. Claims 23 - 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horng (US Patent 6,498,412 B2) in view of Ootsuka et al (US Patent 5,264,748 A) and in view of Hoshina et al (Japanese Patent JP 2002031088 A, English Translation

Art Unit: 3746

Provided) and further in view of Ruotsalainen (PG Pub US 20020179233 A1) and Takehashi (US Patent 5,610,462 A)

81. In Re claim 23, there is clearly a transition region between the shaft (31) and rotor (3) where the end portion of the shaft is joined to the rotor. Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to claim 1 discloses all the claimed limitations as depicted except for a surface to throw off lubricant into the interior of the tube.

82. Nevertheless, in Figure 1, Takehashi et al discloses a surface (58a) that is configured to throw off lubricant into the interior of the bearing tube (46c) during operation. The surface extends radially and located inside the bearing tube.

83. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the portion of Horng that is attached to the fan wheel to incorporate the lubricant throwing surface of Takehashi et al for the purpose of preventing the lubricant from leaking out as stated in the abstract of Takehashi et al.

84. In Re claim 24, the surface (58a) is an undercut as depicted in Takehashi et al.

85. In Re claim 25, Takehashi et al depicts an inwardly protruding portion (46d).

86. In Re claim 26, Takehashi et al depicts a gap between (58a) and (46d). Note that selecting the dimensions of the gap so it is a capillary that minimizes escape of

Art Unit: 3746

lubricant would be routine skill in the art since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art - MPEP 2144.05 (II-B).

87. In Re claim 27, Takehashi et al depicts that the inwardly protruding portion (46d) forms an undercut with the element (46c).

88. Claims 36, 38 – 41 and 43 - 44 rejected under 35 U.S.C. 103(a) as being unpatentable over Horng (US Patent 6,498,412 B2) in view of Ootsuka et al (US Patent 5,264,748 A) and in view of Hoshina et al (Japanese Patent JP 2002031088 A, English Translation Provided) and further in view of Ruotsalainen (PG Pub US 20020179233 A1) and Fujinaka (US Patent 6,832,853 B2)

89. In Re Claim 36, Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to Claim 35 discloses all the claimed limitations except for the inner side having a better machined surface.

90. Nevertheless, Fujinaka, in Column 6, Lines 35-40 states that the outer wall of the bearing and inner wall of the boss is protected from scratching, therefore suggesting a better machined surface over the area of contact between the bearing and the boss before they are press fit (Column 6, Line 44). Further, Column 6, lines 22-25 discloses a

Art Unit: 3746

slightly greater inner diameter grooved wall. The surface finish is therefore worse for the greater inner diameter wall because of the grooves.

91. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have a better surface finish for the inner side of the constriction of Horng as compared to the other larger inner diameter unconstricted surface as taught by Fujinaka to form a better press fit with the bearing (than an unmachined surface).

92. In Re Claim 38, Fujinaka discloses in Figure 8 that the bearing (3) has a portion with an enlarged outside diameter, corresponding to reduced inside diameter of the bearing tube (24). It would have been obvious to a person having ordinary skill in the art at the time of the invention to incorporate the sintered bearing as taught by Fujinaka as the bearing of Horng because of the self lubricating property of sintered bearings.

93. In Re Claim 39, the bearing (3) of Fujinaka depicted in Figure 8 illustrates that its inner contact points with the shaft (4) are located on the outside portion, and have an enlarged inner diameter in the middle where it is not in contact with the shaft.

94. In Re claim 40, Fujinaka discloses that the contact areas between the shaft (4) and the bearing (3) are outside the contact area between the bearing (3) and tube (24).

95. In Re claim 41, Horng discloses that shaft (31) has a free end facing away from the fan wheel (3), and a closure member (14) as described in claim 1.

96. In Re Claim 43, Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to Claim 10 discloses all the remaining claimed limitations.

97. In Re Claim 44, the latching hooks of Horng as well as Hoshina et al are clearly connected to the housing of the fan because the flange is part of the housing. Horng, Ootsuka et al, Hoshina et al and Ruotsalainen as applied to Claim 17 discloses all the remaining claimed limitations.

98. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horng (US Patent 6,498,412 B2) in view of Ootsuka et al (US Patent 5,264,748 A) and in view of Hoshina et al (Japanese Patent JP 2002031088 A, English Translation Provided) and further in view of Ruotsalainen (PG Pub US 20020179233 A1) and Fujinaka (US Patent 6,832,853 B2) and Alex et al (US Patent 6,756,714 B2)

99. In Re Claim 42, Horng, Ootsuka et al, Hoshina et al, Ruotsalainen and Fujinaka as applied to Claim 41 discloses all the claimed limitations except for a lubricant supply.

100. Nevertheless, Alex et al discloses a free end of shaft (22) with a tracking cap (portion under the retainer 23) supported by a surface (Column 4, Lines 21-22: "...distal end of shaft 22 being rotatably supported by the support 35") that is a depression (15 or 35), and equipped with a lubricant (Column 4, Lines 50-52: "...allow flowing of the

Art Unit: 3746

lubricating oil back to a space between a bottom of the oily bearing 34 and the support 35")

101. It would have been obvious to a person having ordinary skill in the art at the time of the invention to further modify the closure arrangement of Horng modified by Hoshina et al to incorporate a support surface depression with a lubricant as taught by Alex et al for the purpose of reducing wear due to friction between stationary and rotating parts and to further restrict radial vibrations of the shaft.

Response to Arguments

102. Applicant has argued on Pages 17 - 18 of Applicant's Response that the primary objective of Horng is to provide a fixing structure for a rotor to allow for easy assembly and detachment, therefore allegedly Horng "clearly teaches away from" the subject matter of independent claim 1 which refers to preventing non-destructive pulling of said rotor shaft out of said bearing arrangement.

103. Examiner's Response: MPEP 2141.02, Section VI states that a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). Accordingly, a reference that teaches away from the claimed invention (Horng) can be combined with secondary reference (Hoshina et al) under 35 USC 103 in the manner proposed by the examiner. As discussed in Paragraph [0025] of Hoshina et al, face

Art Unit: 3746

(43b) of the hooks “collides” with the rear surface (62c) of the free end region of the shaft, thereby preventing non-destructive pulling of the rotor shaft.

104. Applicant has argued on Page 19 of Applicant’s Response that none of the references in the previous office action describes such resilient radially movable latching hooks.

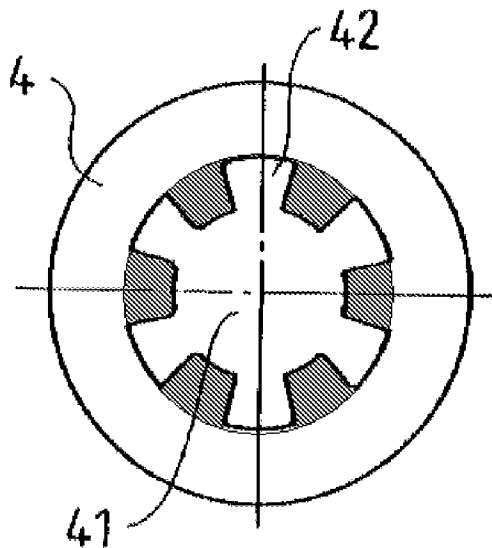


FIG. 6

105. Examiner’s Response: Applicant appears to have missed the fact Horng does disclose six hooks between notches (42), as indicated by the annotated shaded areas above.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DNYANESH KASTURE whose telephone number is (571)270-3928. The examiner can normally be reached on Mon-Thu, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272 - 7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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DGK